Nuclear Reaction Data Centre Network: A Success Story

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For more than 30 years a world-wide network of nuclear reaction data centres, coordinated by the International Atomic Energy Agency (IAEA), has provided data services to the scientific community. This network evolved in several ways, initially addressing the data needs of the fission reactor industry, and then widening efforts to encompass all types of nuclear reaction data, including neutron-induced, charged-particle-induced, and photonuclear data, and considering the requirements of many other applications such as accelerator driven systems, fusion reactors, nuclear medicine, materials analysis, environmental monitoring, and basic research. Consequently, the four original neutron data centres (i.e., core centers: US National Nuclear Data Center (NNDC), Nuclear Energy Agency Data Bank (NEADB), IAEA Nuclear Data Section (NDS), and the Russia Nuclear Data Center (CJD)) have been joined by nine additional specialized data centers based on particular data types or geographic regions.

Data dissemination methods have developed from mainframe printouts and magnetic tapes through Telnet-based online systems to the World Wide Web (WWW) as the primary media for data distribution. Second-generation WWW retrieval interfaces have been introduced, based on modern database technologies, to provide users with more sophisticated search options, a user-friendly retrieval interface, and additional output options such as improved data plotting capabilities.

A central activity of the network is the collection and compilation of experimental nuclear reaction data and the related bibliographic information in the databases EXFOR and CINDA. The data centres also distribute all types of nuclear data information, including evaluated data libraries, nuclear structure and decay data, and nuclear data reports. Some of the centres support other means of data distribution beyond their WWW service, including databases on CD-ROM, running mirror web servers, and the creation of small local nuclear data centres. Other nuclear data-related activities specific to individual centers are reviewed, such as the production of nuclear data handbooks and the creation of new databases for special applications through Coordinated Research Projects.

While the initial function of the NRDC network was to ensure data exchange between East and West, the network today ensures the world-wide transfer of information, coordinated sharing of the workload in times of scarce resources, and the evolution of an important repository of nuclear data for future generations.

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